

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. **Claims 1-4** are objected to because of the following informalities:

In regard to claim 1, the recitation, "A helium 3 refrigerator-utilizing magnetic property measurement system comprising: a helium-3 refrigerator provided with a sample rod having a sample fixed thereon and a main pipe having the sample rod inserted therein and forming in a circumference of the sample rod a space for effecting cooling with helium 3 and a magnetic property measurement system provided with a tubular body for permitting insertion of the helium 3 refrigerator therein and a cooling means disposed on an outer periphery of the tubular body and operated with helium 4 and further provided with a superconducting magnet, a magnetic field forming means, a temperature adjusting means and a magnetic field adjusting means, wherein the main pipe is formed, as recognized sequentially from top to bottom, of an upper supporting tube, a condensing tube, a lower inner tube and an outer tube adapted to form an insulated vacuum chamber between itself and the lower inner tube and wherein the lower inner tube is formed of titanium." should be -- a helium-3 refrigerator utilizing a magnetic property measurement system comprising: a helium-3 refrigerator provided with a sample rod having a sample fixed thereon and a main pipe having the sample rod inserted therein and forming in a circumference of the sample rod a space for effecting

cooling with helium-3 and a magnetic property measurement system provided with a tubular body for permitting insertion of the helium-3 refrigerator therein and a cooling means disposed on an outer periphery of the tubular body and operated with helium-4 and further provided with a superconducting magnet, a magnetic field forming means, a temperature adjusting means and a magnetic field adjusting means, wherein the main pipe is formed, ~~as recognized~~ sequentially from top to bottom, of an upper supporting tube, a condensing tube, a lower inner tube and an outer tube adapted to form an insulated vacuum chamber between **the outer tube** and the lower inner tube and wherein the lower inner tube is formed of titanium.--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirakawa et al. (US 2003/0122543) hereafter Shirakawa in view of Hariharan et al. (WO 2004/079340) hereafter Hariharan. Shirakawa teaches a helium-3 refrigerator (20) utilizing a magnetic property measurement system (1) comprising: a helium-3 refrigerator (20) provided with a sample rod (5) having a sample (parag. 12) fixed thereon and a main pipe (23, 29) having the sample rod (5) inserted therein and forming in a circumference of the sample rod (5) a space for effecting cooling with helium-3 (parag. 12) and a magnetic property measurement system (1) provided with a tubular body (8) for permitting insertion of the helium-3 refrigerator (20) therein and a cooling means (2, 6) disposed on an outer periphery of the tubular body (8) and operated with helium-4 (parag. 32) and further provided with a superconducting magnet (3a, parag. 31, 37), a magnetic field forming means (parag. 53, 54), a temperature adjusting means (54) and a magnetic field adjusting means (52).

Shirakawa does not explicitly teach that the main pipe is formed, sequentially from top to bottom, of an upper supporting tube, a condensing tube, a lower inner tube and an outer tube adapted to form an insulated vacuum chamber between the outer tube and the lower inner tube and wherein the lower inner tube is formed of titanium. However, there are a wide variety of samples that would be desirably tested on the sample rod with differing temperatures and magnetic fields. Further, many testing applications would benefit from a probe that allowed fine movement of the sample during such testing. Hariharan teaches a test probe (18) that provides fine movement (page 6, parag. 5; page 5, parag. 4) for testing samples at various temperatures and

magnetic fields (page 3, parag. 5-6, page 5, parag. 2). Further, Hariharan teaches a main tube formed from top to bottom of an upper supporting tube (30), a condensing tube (top section of 22; see Fig. 3 - 22 from top down to either 38a or step near 46), a lower inner tube (44) and an outer tube (lower section of 22 from step near 46 or 38a down to landing beyond tip 52) adapted to form an insulated vacuum chamber (inside 20; page 17, parag 3) between the outer tube (lower section of 22) and the lower inner tube (44) and wherein the lower inner tube (44) is formed of titanium (page 14, parag. 2). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the helium cooled probe (23, 29) and sample rod (5) of Shirakawa with the control means of Hariharan for the purpose of providing a more flexible test probe, capable of moving the sample during testing. Thus the main pipe would comprise an upper supporting tube (30) of stainless steel (page 12, parag. 3), a condensing tube (top section of 22) and an outer tube (lower section of 22) of copper (page 14, parag. 3; page 13, parag. 2).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on 571-272-4834 or 571-272-

6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John F Pettitt /
Examiner, Art Unit 3744

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art
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JFP III
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